POPULAR MECHANICS

An Illustrated Weekly Review of the Mechanical Press of the World

TELLS YOU HOW TO DO THINGS. WRITTEN SO YOU CAN UNDERSTAND IT

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TINY TORPEDO BOAT ALARMS NAVIES

The Latest Terror of the Deep

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ONE-MAN SUBMARINE TORPEDO BOAT.

Wonderful Little Swimming Machine That Is to Be the Dread of the More Formidable War Ships.

A new terror of the deep has made its appearance in the form of a tiny torpedo boat, only 11 feet long, built for one man only, the invention of Thomas J. Moriarty, of the Newport Manufacturing Company, Newport, R. I. It can dart about on top of the water, under the water, and defy the most tempestuous seas.

The greatest war vessels of the earth's powers would be at its mercy in the event of war. With no danger of detection the little boat can slip down, plant a torpedo on the bottom of the largest man of war, make its escape and rise to the surface again in time to see the monster iron clad be blown into fragments.

Looking like a fish as it glides about on the surface, like a fish it can drop down into the ocean's depths and change its course at the operator's will. It will open up anew to man the mysteries of the deep and make him at home in the realm of the fishes. To the water it is what the perfected flying machine will be to the air.

Almost as long as man has been trying to invent a flying machine he has been trying to invent a one-man sub-marine boat, but this is the first time he has succeeded in devising such a boat—one that will delve into the mysterious deep, rise and sink at the will of the operator. "The boat is guided, submerged and controlled by one person only," says the American Shipbuilder, "and is provided with a conning tower about the size of a bucket. The operator rests in an inclined position in a padded frame. This position gives free play to his legs in operating the pedals connected with the propeller shaft. The man keeps his head in the conning tower, which is provided with a glass front through which can observe his coarse and objects about him. Two handles, connected with the propeller shaft, are in easy reach of his hands."

In addition to the foot and hand power there is a little engine, also connected with the propeller shaft, which is utilized for moving the boat while on the surface and also in filling the air tank. A submersion tank permits the boat to be submerged until the base of the conning tower is level with the surface of the water. Four movable fins enable the boat to rise or plunge beneath the surface when in motion.

A torpedo, suspended in a casing beneath, serves as a keel. When this has been discharged, a collapsible keel is let down from a recess in the bottom of the boat. A stern rudder controlled by a lever in front of the operator steers the boat to either side. The torpedo when released, has a motive power of its own, which is intended to send it forward to its striking point, while the operator hastily escapes in his boat, applying the combined power of engine or motor, arms and legs in his propulsion.

The boat is equipped with numerous ingenious devices for its safety, but should anything go wrong, the operator wears an inflated jacket, and the touch of a spring throws open a hatch, permitting him to shoot to the surface like a cork. Mr. Moriarty was long in the employ of the United States government and is regarded as one of the country's most skilled mechanics.

STEAM HAMMER FOUR STORIES HIGH.

There is now being taken down at the works of the Bethlehem Steel Co., a piece of machinery which has attracted the interest of engineers in all parts of the world. It was built several years ago to make armor plate for the navy and has now been supplanted by more improved methods. It cost a fortune to erect. It struck a blow of 125 tons and shook the earth in all directions for a mile when the blow was given. It was the largest of its kind ever built. The plant also includes a 14,000-ton capacity forging press which requires 15,000 horse power to operate.

HORNET'S NEST SUGGESTED PAPER FROM WOOD.

Discovery that has Revolutionized the Trade and Become a Huge Industry.

Making paper from wood, a method discovered by Dr. Hill, of Augusta, Maine, has in a few years risen to one of the most important industries of the country. It has revolutionized the paper trade of the world and made it possible for a great newspaper to be sold at one cent.

An old hornet's nest led to this most valuable discovery of Dr. Hill. His friend and neighbor, the late James G. Blaine, had told him that there were not enough cotton and rags in the world to supply the newspapers and other publications with their raw material. That was about 28 years ago, when paper was 30 cents a pound. One half the newspapers of the country must have gone to the wall but for the idea suggested to Dr. Hill by the hornet's nest. He took the nest to the superintendent of a paper factory, who was his friend.

"There, why can't you make paper like that?" he asked. They sat down together, took the nest apart, analyzed it carefully and while it appeared complicated to them they decided that if a hornet could make paper out of wood, man could do the same. The doctor discovered that the hornet first chewed the wood into a fine pulp before making it into nest material. The question was, how did they get the fiber? That has not been exactly solved to this day.

Such was the beginning of the wood pulp industry. Now the logs of wood are floated down the river to a pulp mill. In a surprisingly short time each log comes out in a great sheet of pulp ready to be sent to the paper mill.

MAKE TABLE JELLIES FROM OLD BOOTS.

The American the Kind of Economy that Leads to False Pretense.

France is not the only nation that knows how to practice economies. Scraps and shavings of the iron mills and forges, once thought too small for consideration, are now turned into writing ink and into that beautiful dye color, Prussian blue. Fusel oil, a dangerous poison, becomes oil of apples or of pears, for flavoring purposes.

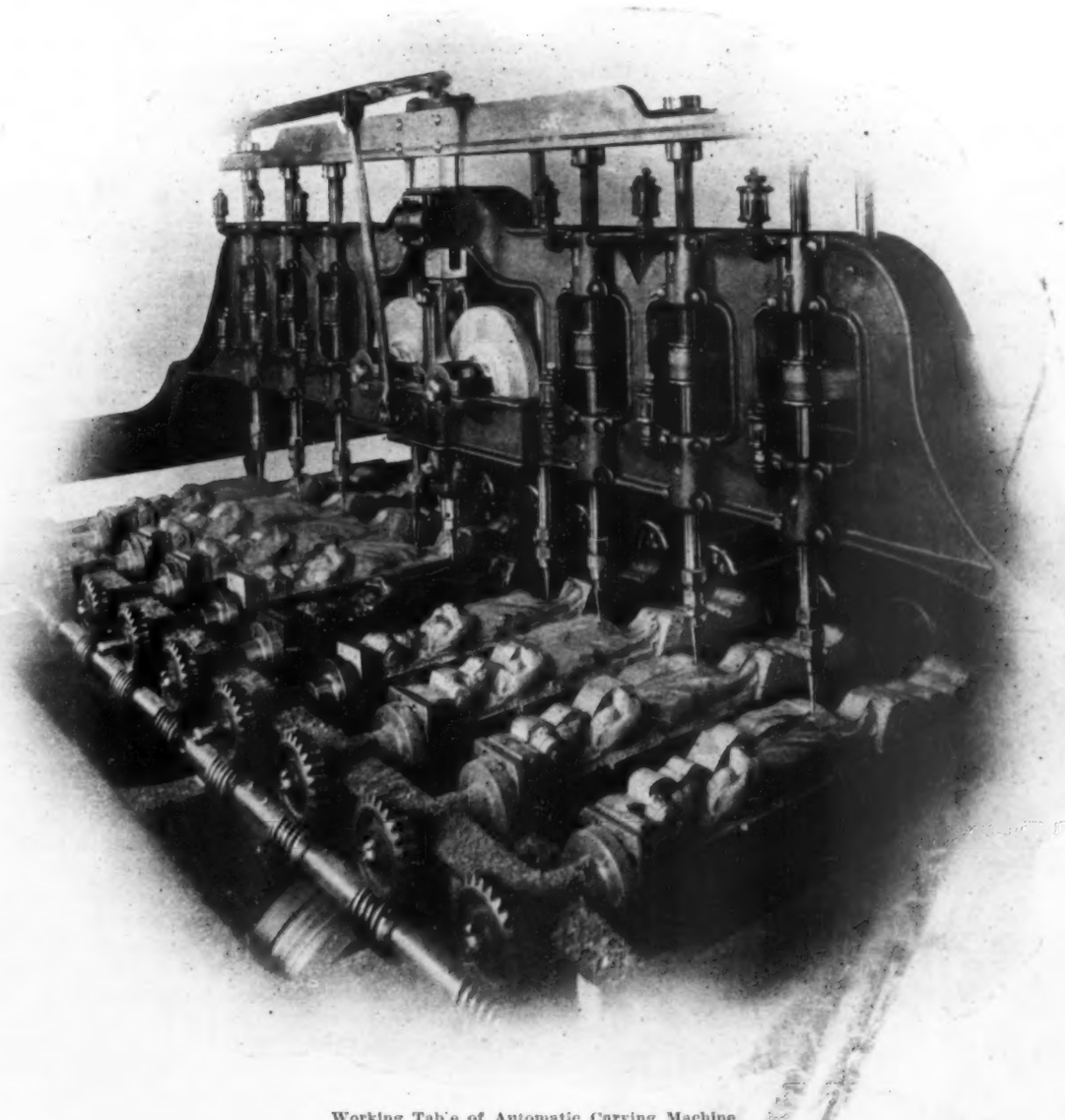
Beggars' rags are turned into pilot coats and the seemingly worthless sawdust into newspapers. Even as the unsavory drainage of the cow barns becomes a basis for the most fashionable perfumery; and the tar waste of our gas works is turned into the most exquisite aniline dyes and into saccharine, the sweetest of all substances. Old boot legs, soles and uppers, bits of harness, and the hoofs, tendons and like worthless scraps of our butcher shops, chemically treated and colored and flavored with the products of equally "useless truck," find their way to the best of tables as "pure fruit jellies." Such is the American method of inventive economy.

RATS OF GREAT COMMERCIAL VALUE IN FRANCE.

In France more than anywhere else the science of economy is carried almost to a fine art. The common sewer rats of Paris are raised to clean the flesh from bones that are to be used in manufactures, but that must not be boiled to clean them. When full grown the rats are killed, their furs are used for fur trimmings, their skins for gloves, their thigh bones for the highest grade of "ivory" toothpicks; their tendons and bones are cooked down to make those beautiful gelatine capsules which our physicians often give us medicine in and their teeth are used for tipping fine burnishers for bookbinder's use.

The total daily production of wire nails is 40,000 kegs or 14,000,000 kegs a year, of which the United States Steel corporation produces 27,000 kegs a day.

CARVES WOOD WITH HUMAN SKILL.



Working Table of Automatic Carving Machine.

A revolution is being worked in wood carving. For years it has been the dream of inventors and woodworkers to devise a machine which would do for furniture makers what the labor saving machinery has achieved in the manufacture of shoes. A certain amount of preliminary carving has been done for several years. The rough carving of the ornamental wood work of sleeping cars is done by machinery, but has to be guided by a skilled man and finished by hand. The Furniture Journal for April 10 contains a full description of a machine built by S. Waupen & Bros. of Chicago, and which we illustrate herewith. These machines when once started carve eight pieces each at one time without any attention from the operator until the operation is finished. For example, eight panels 9 by 25 inches each are made at once and absolutely alike. Fifteen minutes is spent in setting the machine and two hours and a quarter in carving. Thus the eight panels are made in an average of 17 minutes each, which by hand work would take a skilled carver several days. The inventors are Frank Streich and Chas. L. Rurhs.

The American Consul, at Vancouver, B. C., reports a good opening there for a plant to manufacture mill saws.

WEDDING TRIP ON A FIRE WAGON.

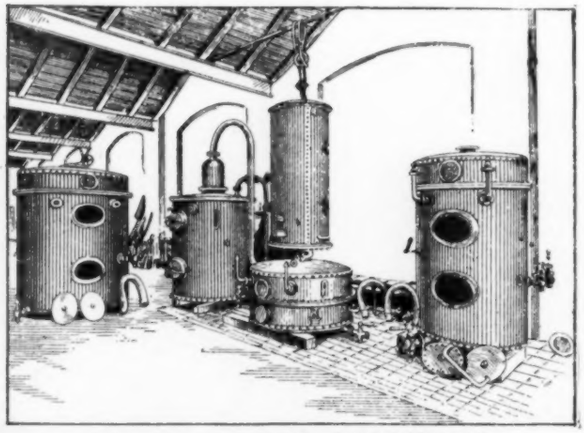
Firemen with a supply wagon attached to the hook and ladder truck went to the depot at Morristown, N. J., to meet Matthieson L. Toms, a fellow fireman who was returning with his bride from a honeymoon. When the bridal couple got off the train they were immediately seized by the four firemen and carried to the decorated supply wagon. The driver whipped up the horses and away they went dashing through the principal streets of the city, the fire-gong ringing and the horses straining their every muscle in the wild flight. A maddened throng pressed hard behind in their eagerness to go to the supposed fire. The wagon and truck brought up at the fire house where the bride and bridegroom were escorted inside. The disturbance was in celebration of his recent marriage to Miss Florence Fisher, of Jersey City.

A New York firm recently sent a man to Manila to build a furniture factory to employ about 400 hands. The agent became disgusted with the Filipino workmen and has gone to Hong Kong to establish the factory where a more satisfactory class of labor can be had among the Chinese.

TRAINS DRAWN BY ALCOHOL LOCOMOTIVES.

Wonderful Advancement of Spirit Motive Power in Germany.

Alcohol is made to perform many functions in Germany, from illuminating a night lamp to running a train of twelve cars. Through special encouragement of the crude alcohol industry Germany now excels all other nations in its advancement. It is



EQUIPMENT OF A GERMAN FARM DISTILLERY.

used for power, lighting, heating, cooking and in many parts is supplanting petroleum, gas, electricity and coal. As an illuminant it is a rival of the electric light. Its cleanliness, freedom from odors, make it especially desirable for motor carriages, engines for operating creameries and small manufacturing plants near dwellings. At its present price of 13½ cents a gallon, it is as cheap as coal or coal oil.

The alcohol for commercial usage in Germany is made from potatoes, crude molasses, sugar, grain and other substances.

Portable Alcohol Engine.

More than 30,000,000 gallons were produced and used last year. Alcohol locomotives for pulling trains of cars were exhibited at a special exposition which has just closed at Berlin. Frank H. Mason, United States consul general at Berlin, says:

"These locomotives, which can pull trains of a dozen cars each, are adapted for service on large farms and sugar plantations and for mining, tunneling and engineering operations. The locomotives are of the vertical cylinder type and carry a fly wheel to balance and regulate the motion of the engine. Caloric engines built especially for the consumption of alcohol were exhibited in motion, geared to motor pumps, circular and band saws, mills for grinding corn, or turning the machinery of distilleries. There were numerous motor carriages. The Schuckert company of Nuremberg exhibited a 12 horse power military field lighting wagon, in which a dynamo driven by a double-cylinder spirit engine, generates electricity for lighting a camp, headquarters or group of hospitals. It was self propelling and had a speed of 10 miles an hour. Theoretically alcohol has only three-fifths of the thermal value of petroleum, but it has been found that for motor purposes 28 per cent of the theoretic energy can be ultilized against a maximum of 15 per cent in case of petroleum and its products. This advantage is still further increased by an admixture of 16 per cent of benzol.

EXHAUSTION OF GAS SUPPLY CAUSES DISTRESS.

Cheap Fuel for Indiana is No More and Small Industries Are Leaving.

The rapid exhaustion of the natural gas supply of Indiana is working consternation among the smaller industries in the gas regions of that state. The natural gas companies of Indianapolis and Muncie have served notice that they will not supply natural gas for fuel purposes after October next. Some of the industries established there entirely on the strength of the cheap fuel have been abandoned and others are preparing to move away. The American Tin Plate Company and the American Sheet Steel company have already abandoned the use of fuel gas in favor of coal. The conditions are causing sorrow among the poorer classes who must forever be deprived of the cheap fuel they have so long enjoyed. The Metal Worker says:

"The failure of the natural gas supply will naturally arrest to a considerable extent the industrial development of that part of the country. It is said that whereas every foot of territory in the Indiana gas belt has been drawn upon, the pressure is diminishing rapidly, indicating that the supply is giving out with the prospect of eventually ceasing altogether. For some time past the reports of the state gas inspector and the government exports have foreshadowed the exhaustion of this fuel.

REMARKABLE CHANGES IN IMMIGRATION.

Immigration statistics for the past three years show a remarkable increase in the number of percentage of Hebrews, Poles, Slovaks and Southern Italians. In 1899 the great bulk of American immigration was Teutonic and Irish, while that from Eastern and Southern countries, was hardly appreciable. Now the conditions have reversed and 68.6 per cent of the total immigration are Hebrews, Poles, Slovaks and Southern Italians. Here are some figures that reveal the truly remarkable conditions:

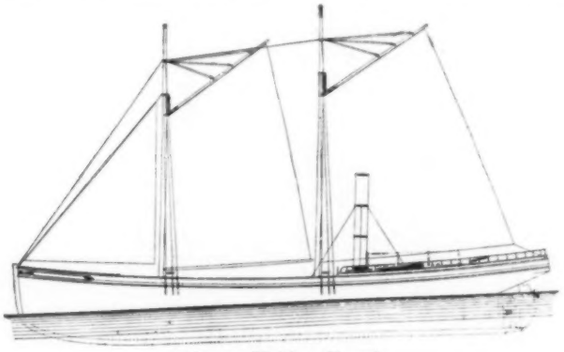
	1899.	1900.	1901.
Southern Italian	65,639	84,346	115,704
Hebrew	37,415	60,764	58,098
Polish	28,466	46,938	43,617
Scandinavian	23,249	32,592	40,277
Irish	32,345	35,607	30,404
German	26,632	29,684	34,712
Slovak	15,838	29,243	29,343

HOW FIRE IN A MINE WAS PUT OUT.

In a paper before the Central Mining Institute of Western Pennsylvania, James Blick, mine inspector, describes several mine fires. One of these was caused by a night driver falling asleep and letting his lamp set fire to a heap of hay in the underground stables. All the miners escaped, and the mine was sealed up for three weeks, during which time the fire burned constantly. Cracks in the rock and earth allowed air to reach the fire. Then a 7-inch hole was bored down to the mine and 5,000,000 feet of carbonic acid gas passed down. Steam pumps also poured a deluge of water. After three months' work the fire was extinguished. There had been no loss of life, but the mine and the company owning it were both ruined.

STEAM TO SUPPLANT SAILS.

The great fleet of sailing vessels which for more than a century has been going out from Gloucester, Mass., is destined to give place to steam propelled fishing boats. The first one of the new type which it is believed will be adopted has just gone into service. This boat has 300 horse-power, carries 26 men, is 141

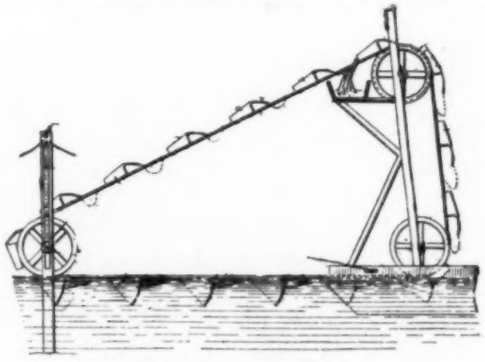


Steam Fishing Vessel.

feet long, 24 feet beam, and draws 10 feet. Compartments for the storage of the fish are cooled by a modern refrigerating machine. A condenser distils sea water intro drinking water, while steam heat and electric light provide luxuries the fisherman on the Banks has never known before. Two sails are provided for emergency use.

CURRENT DRIVEN WATER ELEVATOR.

This device is intended for use in irrigation work, and consists of a set of buckets carried on an endless cable which is driven by the current of the stream. The buckets are so shaped and hung that when they enter the water they open and form a



A Current Motor.

broad paddle on which the current pushes. When the buckets turn to ascend they close and deliver their contents into a trough. The number of buckets and the length of cables are determined by the force of the stream and the height to which the water must be raised.

PUPILS' EFFORTS IN LEARNING TO PAY FOR THEIR EDUCATION.

The theories of Ruskin and William Morris will be given practical demonstration in Chicago in the establishment of a local workshop in connection with a school, under the jurisdiction of the Industrial Art League. Here it is purposed that the efforts of the pupils in acquiring an industrial art will be utilized to pay the expenses of their schooling. It may be connected with the Jewish Training School, a non-sectarian institution which is operated on a similar principle. At first many of the boys coming to this school were forced by lack of means to leave the institution in order to go to work. This resulted in the establishment of a small workshop in which marketable wares were made and in which the boys were able to earn enough after school hours to keep them in school. The boys took up the work with enthusiasm, became self-supporting, continued in school without charity and laid the foundation for learning a useful craft.

Miss Marguerite A. Springer will attend the Chautauqua at DeFuniak Springs, Fla., in the effort to establish a similar working center in the South. The new movement has the endorsement and support of Chicago clubs, churches, clergymen, educators and philanthropists.

CHICAGO'S FIRST LAKE SHIPMENT OF WHEAT.

The first shipment of wheat from Chicago via the lakes was made in 1838. The shipment consisted of 78 bushels. H. A. Foss, of the Chicago Board of Trade, in a paper reported in the Grain Dealer's Journal, says:

"The historic 78 bushels were shipped in bags to Buffalo on the steamer Great Western by Mr. Charles Walker, of Walker & Co. The second shipment of wheat from Chicago was from Newberry & Dole's grain warehouse in 1839, which was the

Chicago's First Grain Warehouse.

first one in Chicago and was situated at the north end of Rush street bridge. This shipment comprised 3,678 bushels, and was bought from farmers' wagons and hoisted by hand power to the upper story of this warehouse, pulley-blocks and ropes being used; it was then transferred to the brig Osceola from bins in the upper story by forming a line of men who passed the grain in buckets, precisely as bucket-lines were used to pass water at fires before the introduction of fire engines. It was then poured through a spout to the deck of the vessel and into boxes holding four bushels. These boxes were then carried to the hold of the vessel by two men."

PREDICTS NIAGARA WITHOUT WATER.

Turbines for electrical power are to obliterate great Niagara falls, according to the predictions of Lord Kelvin, in a speech before Columbia university. He said:

"I fervently hope to see the day when we shall have the transmission of electrical power over 300 miles with a voltage of 40,000. With the wonderful transmission of power at Niagara Falls my dream looks to be near fulfillment in the close future.

"And let me tell you American people there may be a time when the waters will flow no more over that great horseshoe, but instead there will be a beautiful growth of vegetation far more superb than any water flowing in torrents over the precipice, water that will find its way down countless turbines, spreading light and power for hundreds of miles in all directions."

Easy Electrical Experiments
FOR BOYS

By L. P. Dickinson

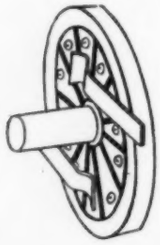
CHAPTER XVIII. ASSEMBLY OF 1-20 H. P. MOTOR.

The different parts of the motor are now complete, and it remains only to assemble these parts in their proper order. The diameter of the armature is such as to leave a little less than ⅛ inch clearance all around, when it is placed in the circular chamber at the bottom of the field magnet. It must be mounted in its bearings so as to revolve freely in the center of this space.

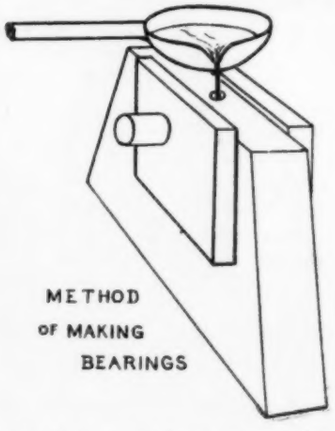
To do this remove the wooden uprights at each end of the board. Wrap around the armature enough paper, evenly wound on, so that the armature with the paper wrapped upon it shall just slip into the circular space designed for it. The paper is only a temporary arrangement for locating the armature in the center. Place it so that the ends of the armature project equally from each side of the magnet. Also be sure that the commutator is on that side of the magnet which has the widest clearance between the magnet frame and upright piece. If all directions have been followed, there will be at least 1 inch of clear shaft projecting from the commutator end of the armature, and 1⅛ inches projecting from the other end.

Measure the height of the shaft above the base board. In the middle of the two uprights, bore two holes, whose centers are the same height above the base as the center of the shaft. These holes should be ⅝ inch in diameter. When these uprights are replaced, the end of the shaft should just come even with the outer surface of the upright on the commutator end, and on the opposite end should project at least ½ inch beyond the upright, to allow room for a pulley.

Make four pieces of wood, 1½ inches square, ¼ inch thick and with a smooth hole through the center just large enough to fit tightly upon the shaft. Slip one of these upon each end of the shaft. Replace the wooden uprights, allowing the shaft to pro-



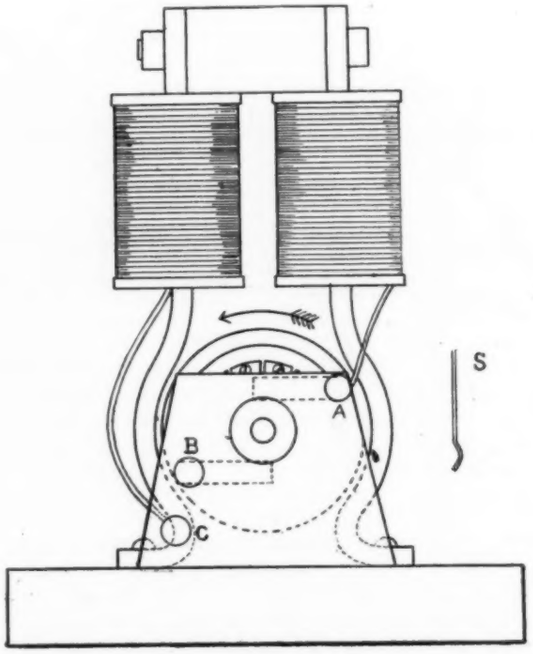
BRUSHES AND COMMUTATOR



METHOD OF MAKING BEARINGS

ject through the centers of the ⅝ inch holes in the uprights. Then slip the remaining two pieces just constructed upon the ends of the shaft, and push the four pieces of wood tightly against the uprights. Screw or clamp them there with a carpenter's screw clamp. Bore a ⅛ inch hole from the top of each upright down into the circular chamber thus formed in the wooden upright. Then melt some babbitt metal, or if this cannot be secured, lead will do very well, and pour it through the ⅛ inch hole so as to fill the space between the shaft and wooden uprights. The object of the square pieces of wood which were just slipped upon the shaft is to make a little chamber in the upright into which the melted metal is poured as just described. Accordingly they must fit the shaft tightly and must fit smoothly against the faces of the upright.

Now remove the uprights, remove the pieces of wood from the shaft, and unwrap the paper from around the armature. These have served their purpose, and may be thrown away. The bearings just made will probably fit the shaft too tightly, and should be carefully reamed out until the shaft turns very freely, when oiled, but not loose enough to rattle. In replacing the upright strips, care must be taken to put them on at the



End View of Motor.

same end and in the same position as when the bearings were cast, as otherwise the shaft will bind. The bottom of the uprights should be very smooth and square for the same reason.

There will be a little room for the shaft to slip sidewise, if all dimensions are correct. At the commutator end, the latter should be kept at least ½ inch from the bearing by means of a brass ring of that width slipped upon the shaft. Be very sure, however, that this ring does not touch the commutator segments. Failure to observe this precaution will render the motor useless. At the other end of the shaft a narrow ring should also be slipped on, so as to keep the armature from moving sidewise. This last ring is also very important, as it keeps the armature wires from striking against the bearing, and must not be omitted.

The brushes which are to press upon the commutator and carry the current to the armature must next be made. These should be cut out of very thin sheet copper, very springy and flexible. They are about 1½ inches long, ¼ inch wide and of the shape shown at S. One is attached to the upright as shown at A. It bears firmly against the commutator on a vertical line passing through the center of the shaft. The other spring of the same size and shape is shown at B, and presses against the commutator directly below the shaft, as shown by the dotted line.

These springs are connected to binding posts as shown at C, which connects with one terminal of the field coil. The other terminal of the field connects to A.

The battery to run the motor is connected to posts B and C. The motor should then run in the direction indicated by the arrow. If it does not interchange the wires which run to C and A from the field coils.

The motor is designed for a maximum capacity of 5 amperes and eight volts. A suitable battery for running the motor will be described in a later paper.

STORAGE BATTERY CARS A FAILURE IN EUROPE.

Not less than four or five million dollars were spent in the United States in an effort to secure a storage battery which could be used in street cars. The effort has been abandoned because the sudden and severe strains on the batteries caused by starting the cars destroyed the batteries in a short time, and no road was able to earn enough money to keep up the renewals of the battery plate.

In Europe, however, it was believed we had abandoned the batteries either because we could not make perfect and durable cells, or more likely on account of our prejudice in favor of the overhead trolley. Hence in many cities on the continent the storage battery system was installed after American experts had predicted certain failure. In England nearly all the storage roads have changed to other systems, but German roads have persisted in the hope of success. Even these are now giving up the fight. At Hanover, where there are 165 miles, of which 55 are in the city, the country branches have used the trolley while the 274 city cars ran by storage batteries carried on the cars. The London Electrical Review says:

"The experience gained from the working of this large number of cars shows that battery traction is too costly, that the heavy weight of the cars wears out the permanent way too quickly, that defects arise which militate against the cars affording an efficient service, and that the danger of explosions is always present."

At Arnsberg the government commissioner has ordered the batteries removed and the overhead trolley to be substituted. At Halle the battery cars were put on because the University authorities feared the overhead wires with track return current would disturb the laboratory instruments, but the company cannot exist long if forced to use the batteries. So far the University will not consent to a change, and the city may soon be without street car service. At Berlin the storage cars have caused so many accidents the police have ordered their removal and the adoption of an overhead trolley system.

DISPATCH TELEPHONE FOR ELECTRIC LINES.

The fast running cars of the electric lines out in the country are generally single track roads, and in their operation the telephone takes the place of the telegraph of steam roads. By this means the dispatcher can direct the movement of cars many

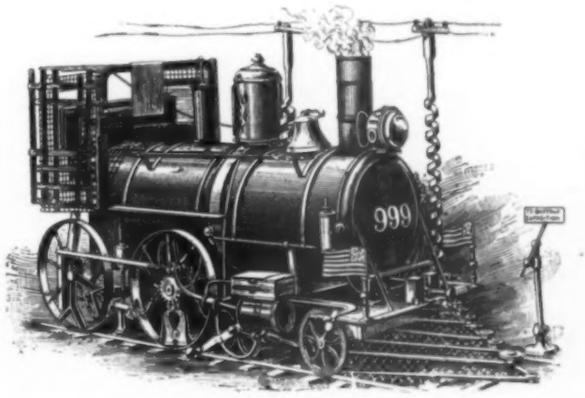
Telephone for Electric Lines.

miles away, give orders for a wait at passing points, or clear the line for a special car in a fast run. These telephones are fastened to the trolley poles at frequent intervals and the conductor can always get orders as to what to do. The system illustrated here is made by the Ericsson Telephone Co., of New York.

Bubonic plague has appeared among the kangaroos in the zoological gardens of Sydney, New South Wales.

A HARDWARE LOCOMOTIVE.

A locomotive 42 inches long and 20 inches high was recently displayed in a New York hardware store window, says the



An Ingenious Locomotive.

Metal Worker. It was made entirely of goods usually kept for sale in such a store. The smoke was Russia hemp rope untwisted.

METALS UNDER WATER 300 YEARS.

Strange Effect of Sea Water on Substances Dug Up on the French Coast.

An old fire arm, resembling an ancient arquebuse, cannon balls and shells, and other metalic objects, which had been under water for 300 years, were brought from the sea bottom recently while dredging in the harbor of Brest, France. They are believed to have been thrown overboard in a fight with the Spaniards in 1594. The chemical analysis of the exterior and interior of the arquebus barrel showed copper on surface 80.3 per cent; inside, 82.9 per cent; sulphuret of copper on surface, 9.8 per cent; tin on surface, 9.7 per cent; inside, 9.4 per cent; lead, only traces in both cases. The excellent preservation after 300 years submersion, show the great length of time that bronze of analogous composition, or containing only traces of lead, iron or zinc will endure in sea water.

The cannon balls and other cast iron objects were all incased in a hard coating, probably an inch thick, made up of sulphurets, sand, rust and calcereous concretions. This coating required a hammer and chisel to break it, says the Engineering News, and came off like a mold, leaving the objects encased, little altered in appearance and simply covered with a viscid black layer, disagreeable to the smell. It was a mixture of hydrogen sulphide and silica. The iron, however, had undergone that type of decomposition known as the softening of cast iron. Specimens could be cut with a knife as easily as graphite in a pencil, and showed a similar brilliant black section, which tarnished quickly upon exposure to the air. It broke easily and was readily reduced to powder in a mortar.

A HANDY TOOL.

A correspondent of the Blacksmith and Wheelwright sends that paper a sketch of a tool that he uses as a tire puller. If th reader will note its construction he will see that it can be

used in a great variety of situations where it is necessary to "yank" something, and such situations occur in factories sometimes. The device is simple and requires no explanation.

Popular Mechanics

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Popular Mechanics is an illustrated weekly review of the mechanical and engineering press of the world, presented in plain, simple language, and condensed as much as possible. We always credit publications from which illustrations and facts are taken. Where the name only of such publication is given, it indicates we have used practically the entire article. Where name of publication with date of issue is printed, we have made only a brief digest, and those of our readers who desire to study all the details of the subject should procure from its publishers, or their local newsdealer, the copy of that date

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NATURAL GAS IN COLORADO.

Oil and natural gas discoveries are creating great excitement now in Colorado. A writer in Mines and Minerals says:

Some time ago we had a forcible example of the existence of natural gas at the junction of Piceance Creek and White River in northwestern Colorado. A well had been put down on certain gas signs in search of oil. The driller, to amuse his friends, incautiously lighted it. The result was a column of fire shot nearly a hundred feet into the air, seriously burnt the operator, destroyed the machinery, and illuminated the neighborhood for several weeks with a geyser of fire so that you could read fine print at midnight for miles around. We visited the spot two years later and found a circular pond about 12 feet in diameter in which the water was churning around from a powerfully bubbling gas body in the center. At a safe distance we set the pond on fire and it blazed up to a height of several feet, throwing out a great heat. We left it burning.

BURNING NATURAL GAS ON WHITE RIVER, COLO.

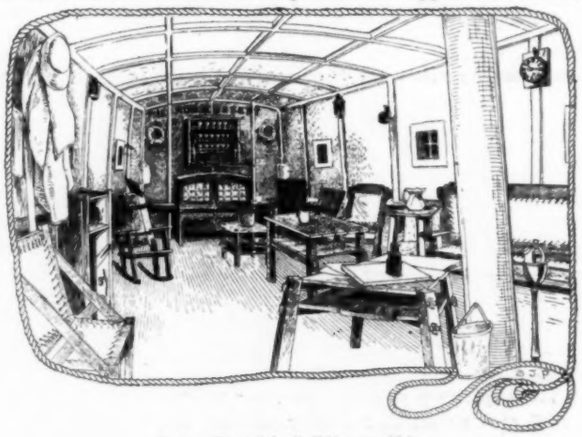
"When it is great Popular Mechanics will tell about it."

The Baldwin Locomotive Works is building 50 oil-burning locomotives and 69 coal-burning for the Atchison, Topeka & Santa Fe railroad.

Mike (to the chemist): "The dochter said, 'Take wan of these pills three times a day.' I tuk wan of thim wanst, but the man doesn't live that kin take wan of thim three times."—Dental Digest.

MARINE OAK FURNITURE.

A Chicago furniture dealer who has a fine summer place at the sea shore, has conceived the novel idea of a complete set of furniture in oak finished to represent the appearance of such articles as have been colored by long years at sea. The entire finishing of a room is intended to be a copy of a captain's cabin of a sailing vessel; even to the mast and binnacle. The idea is specially good for dens or summer homes.



Room Furnished Like a Ship.

MUMMY WORRIES LONDON COURT.

Remains of an Alleged Peruvian Princess in a Railroad Mix-up.

Another mummy has got into trouble: this time a royal princess. The London court of appeals is all upset over a trial in which a mummy, supposed to be the remains of a princess of Peru plays the principal role. The mummy was shipped over the London & Northwestern railroad, and the alleged royal relatives of the alleged royal mummy want $50,000 damages for injuries the mummy is said to have sustained. The company contends that the "mummy" is not a mummy at all, but only the embalmed body of some person who died long after the conquest of Peru and that legally the plaintiff can have no property in a corpse. To identify the contents of the mummy case as the remains of this esteemed princess of the Incas is the perplexing question the court is called on to decide.

BARK SUNK BY A MONSTER WHALE.

Whole Side of the Kathleen Stove in—Crew Rescued by the Captain.

Survivors of the whaling bark Kathleen, of New Bedford, which was sunk by a monster whale, 950 miles out from Pernambuco, have reached New York. Chief Bowman Manuel Viero tells the following story of the exciting encounter:

"We had struck a school of whales and had killed three. One was tied up alongside. Two others were being towed toward the ship. It was about 5 o'clock in the afternoon when my boat started a buster. He sounded and we went after him. I got him on the rise with a harpoon and got him good. He sounded again, but he came up quickly. As he came up he saw the ship and he made for it like a torpedo boat. The line by which the harpoon was held went through the cleats like blue smoke. I had to cut the line to save ourselves. The Kathleen was only a quarter of a mile away, and he hit it just a little aft of amidships. He just stove its whole side in and the ship went over on its beam ends. The whale gave it a slap with his tail and sounded. That was the last we saw of him. The Kathleen went down in about thirty minutes. The captain had got everybody off by that time."

LOCOMOTIVES OF A CENTURY

[Being an illustrated history of locomotive invention, building and progress. The facts are taken from a paper by S. M. Vauclain, read before the New England Railroad Club. The illustrations were gathered and engraved by the Baldwin Locomotive Works, by whose permission they are used.—Editor P. M.]

The ten-wheel engine which was tenaciously adhered to for freight service for the last half of the 19th century, first made its appearance in 1846, having been brought out by Septimus Norris and John Branch. This engine is shown in Fig. 21. It

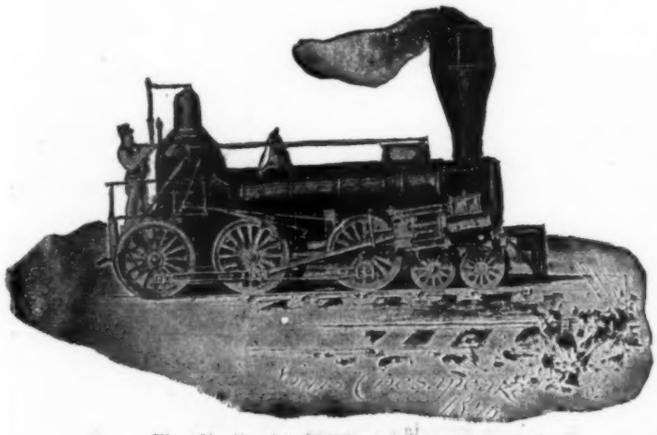


Fig. 21. Norris' 10-Wheel Locomotive, 1846.

is now being rapidly superseded by larger and heavier power for heavy freight at slow speed.

Again in 1848 Winans astonished the locomotive world with his Camel (Fig. 22). The perfected camel is shown in Fig. 23, a type yet well remembered by many Americans. It was built in 1851. While awaiting the construction of a tunnel one of these engines was used by the Baltimore & Ohio to work a

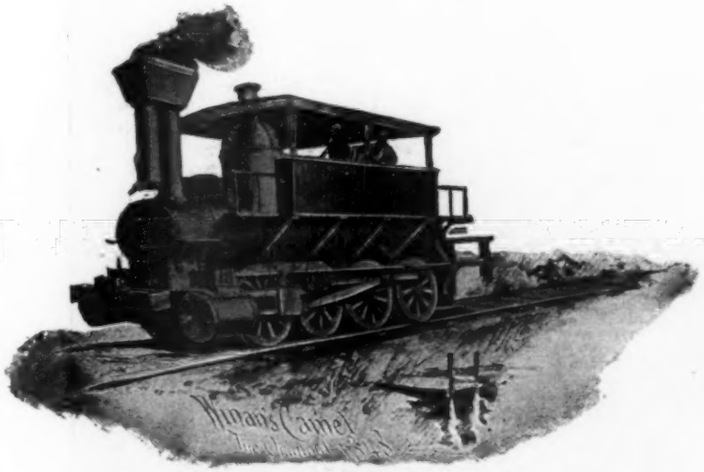


Fig. 22. Ross Winans' Original "Camel", 1848.

temporary line with a grade of 530 feet to the mile, the weight of the engine and train aggregating 50 tons.

In 1851 Wilson Eddy, with whom all New Englanders are familiar, introduced the "Gilmore" (Fig. 24), with wheels 6 feet 9 inches in diameter. The placing of the cylinders of an 8-wheel engine horizontally, as shown in this design, was thus early established as an assured feature in this type.

We now come to the first engine to burn anthracite coal, which marks a distinctive step in the wonderful evolution of the locomotive. It was James Milholland's "Illinois," shown in Fig. 25. This locomotive was equipped with wrought iron driving wheels seven feet in diameter and attained a speed of 75 miles an hour. The cylinders were 17 inches in diameter and 30 inches stroke. These locomotives were the most advanced

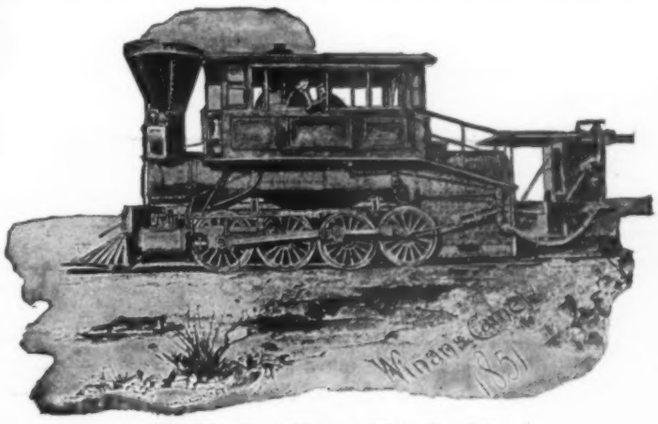


Fig. 23. Ross Winans' "Camel", 1851.

and mechanically perfect machines produced at that period. It was the beginning of the modern flyer, which has now reached such an advanced stage as to prove that mechanism in this line

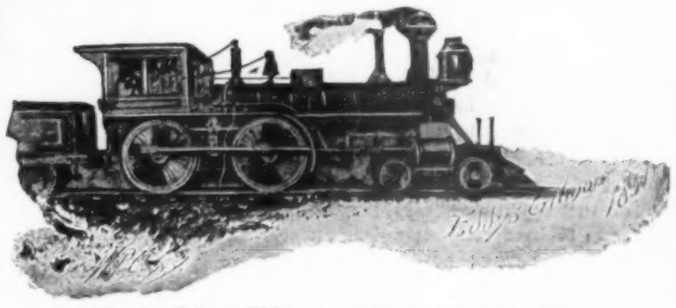


Fig. 24. Wilson Eddy's Locomotive "Gilmore," 1851.

has exceeded the capability of the man. As stated in Popular Mechanics, page 140, it is easy to build an engine at this day that will run 150 miles an hour, but where can be found the

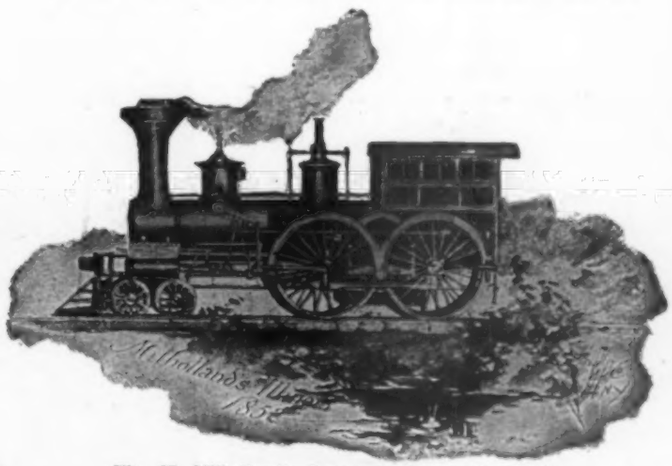


Fig. 25. Milholland's Passenger Locomotive, 1852.

man to drive it? It is beyond the physical endurance of an engineer to stand the nervous strain of running an engine for any length of time at 150 miles an hour.

Charles C. Klein, of Urichsville, O., left his home rather than fill the office of mayor, to which he was elected against his will. He did not return until some one else had been made mayor.

TRACKLESS TROLLEY CAR IS COMING.

The trackless trolley car, a European conception, described in Popular Mechanis, a short time ago, is to make its appearane in America, Artemas B. Upman, of Boston, has been given the right by the local authorities to erect poles and string wires for a trackless trolley system to run automobiles by trolley between Franklin and Franklin Falls, N. H.

AMERICA'S PRODUCTION OF COPPER.

America produced 24,035 tons of copper in March, while all the mines of Europe combined produced but 8,789 tons. During the last three months American production amounted to 63,321 tons, which is 3,842 tons less than the corresponding three months of last year. The exports amounted to 51,226 tons, an increase of 25,955 tons, compared with 1901.

ELECTRIC POLICE AMBULANCE A SUCCESS.

The electric police ambulance, after a severe test, has been placed in regular service by the police commissioners of Hartford, Conn. The first order was made about a year ago, and now the commissioners have placed a second order for the same type of vehicle, having decided to do away with the old style ambulance entirely. The records of the department, says the Motor Age, seem to have completely demonstrated the great advantage of electric over horse-drawn vehicles for this class of service.

THE LAST WORDS OF JACKSON.

On May 10th we celebrate the thirty-ninth anniversay of the death of Stonewall Jackson.

"He died in a house that is still standing at Guinea Station in Virginia, on the line of the Richmond, Fredericksburg and Potomac Railroad," says Edward M. Alfriend, in May Lippincott's Magazine.

"His left arm was amputated at the shoulder, being taken out of the socket. When he closed his eyes in death his little daughter, then two or three years old, lay on his breast with his right arm over her.

"His dying words were: 'Pass the infantry rapidly to the front.' 'Tell A. P. Hill to prepare for action.' 'We will pass over the river and rest under the shade of the trees on the opposite side.' He was delirious, and, like Napoleon's, his mind, as it feebly fulfilled its last offices, was with his military past.

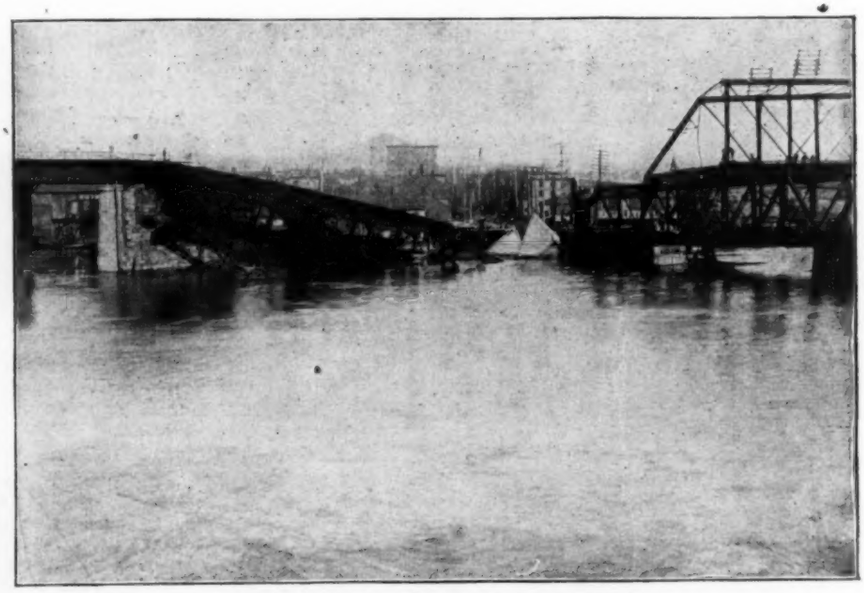
"So sank to rest one of the knightliest soldiers that ever 'wore sabre on his thigh.'

"As General Dick Taylor said of him, How to estimate his genius I know not, for he was ever superior to occasion.'"

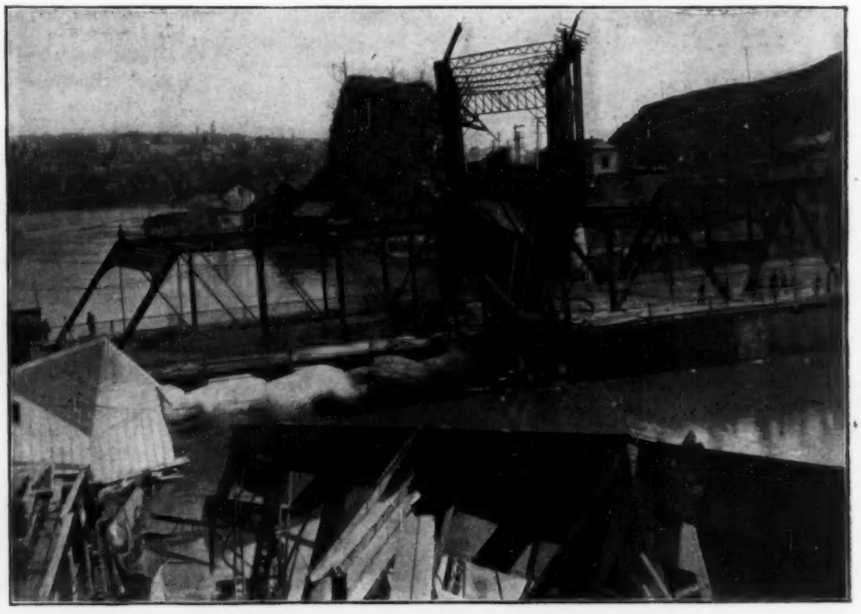
The fare on the Congo railroad for 250 miles is $100, or 40 cents a mile.

SPRING FLOODS CAUSE GREAT DAMAGE.

Spring floods in the eastern portion of the United States this season were the heaviest in twenty years. Railway tracks and bridges were swept away by the maddened waters, and all overland shipping interests suffered considerable loss. The accompanying illustration shows the recent wreck of the Central of New Jersey Railroad bridge, caused by high water, at Easton, Pa., as illustrated in the Railway Conductor, one of the foremost railway journals of the world. Washouts and wrecks, not quite so serious, occur every year at about this season, causing loss of millions of dollars, but it seems that the shipping interests are unable to fortify themselves against the danger.



Railroad Bridge Wrecked by Recent Flood.



Another View of Same Bridge.

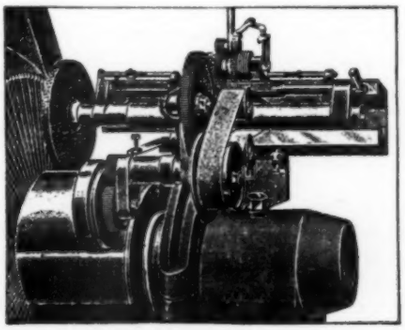
PASSING OF THE TALLOW CANDLE.

The tallow candle is on the eve of extinction. The beeswax candle still remains and is growing more popular, notwithstanding that it is the most expensive. Fully 85 per cent of candles burnt in Great Britain are made from paraffin wax, more or less stiffened by varying admixtures of stearine. Then come stearine candles themselves, and finally beeswax, spermaceti and other candles composed of mixtures of more or less rare waxes.

SHOP NOTES

AUTOMATIC COMMUTATOR GRINDER.

An English machine for automatically grinding the commutators of electric generators is here illustrated. It operates by friction, and can be adjusted and the grinding finished in two hours.



Commutator Grinder.

SMALLEST SCREWS IN THE WORLD.

The smallest screws in the world are those made for watches. They are cut from steel wire by a machine. The fourth jewel-wheel screw is next to invisible, and to the naked eye it looks like dust. With a glass, however, it is seen to be a small screw, with two hundred and sixty threads to an inch.

These little screws are four one-thousandths of an inch in diameter, and the heads are double in size. An ordinary lady's thimble would hold one hundred thousand of them.

In determining the number, says the Analyst, one hundred of them are placed on a very delicate balance, and the number of the whole amount is calculated from the weight of this. All the small parts of the watch are counted in this way, probably fifty out of the one hundred and twenty.

After being cut, the screws are hardened and put in frames, about one hundred to the frame, heads up. This is done very rapidly, but entirely by the sense of touch instead of by sight, so that a blind man could do it as well as the owner of the sharpest eye. The heads are then polished in an automatic machine, ten thousand at a time. The plate on which they are polished is covered with oil and a grinding compound, and on this the machine moves them very rapidly by a reversing motion, until they are perfectly polished.

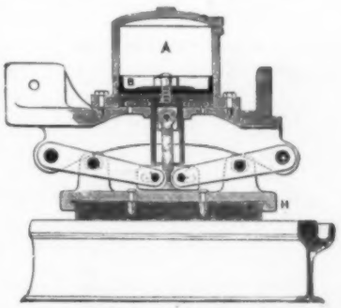
HOW TO COLOR ELECTRIC LAMPS.

Very often much effectiveness can be worked out in a window trim with the aid of colored lights, says the Dry Goods Reporter. Colored lights are expensive. The following formula will explain how to color electric lamps, thereby saving a big part of the expense. Take a little white shellac, thin it down with alcohol, and by dipping the bulb in this it produces a splendid imitation of frosted glass when a clear white light is required. Care must be taken to have the shellac very thin, otherwise it will not run smooth. If you use green, purple, red, blue or any other color, buy a package of egg dye of the color required, dissolve it in wood alcohol and pour it into the shellac. By using this or any transparent coloring a vast number of beautiful tints can be made that will blend with your color scheme.

To go about it properly and to get the best results, after preparing your shellac pour it in a vessel deep enough to immerse the lamp. Take a piece of wire and fasten it around the socket of the lamp, then bring one end of wire back over the end of the lamp to opposite side of lamp to form a loop, then dip it in the solution and hang it up to drip and dry. While mixing your color bear in mind that the more dye and the less shellac the deeper the tint will be, and vice versa. Any of these colors can be removed with wood alcohol.

ENGLISH TRACK BRAKE.

Track brakes on street cars are in general use in England in addition to the usual wheel brakes. The brake consists of a wooden shoe held in an iron frame which can be pressed down firmly on the rail.



English Track Brake.

A new type of this brake has just been brought into notice which uses compressed air to apply the shoe to the rail. The air is let into the cylinder A and forces down the piston B which in turn presses the shoe H. The action is quick and powerful.

The largest loaves of bread in the world are those baked in France and Italy. They are often as much as six feet long.

London has just awakened to the fact that American capital has purchased all the great steamship lines that enter the new trans-Atlantic company, under the control of J. Pierpont Morgan and others.

CORN OIL.

Did you ever hear of corn oil? Not the kind that removes corns from the feet in twenty-four hours, but a merchantable product sold by the barrel. There are already several mills for manufacturing corn oil, and the American Miller describes the latest and largest mill, which will consume 32,000 bushels of corn daily and produce 100 barrels of the oil. The oil is made from the germ of the corn, and in this country large quantities are used by linseed oil people, varnish and soap makers. Other large quantities are exported to Europe, and come back nicely labeled and is consumed here as olive oil at fancy retail prices.

NO COAL IN SWITZERLAND.

Not a pound of all the coal burned in Switzerland is dug within the borders of that country. It must all be imported from elsewhere. The Swiss are now waking up and asking what would happen to their railways if outside nations took a notion to cut them off. Thorman, a noted Swiss engineer proposes to harness enough waterfalls to furnish all the power now made from coal. He has already selected 33 stations in different portions of the state where a total of 86,000 horse power is available. To install these water power stations and change the railways from steam to electric system will cost $31,000,000. The railways are at present using 30,000 of steam horse power.

EIGHT HUNDRED TONS OF STORAGE BATTERIES.

A storage battery company in the east is now shipping 823 tons of storage batteries to Seattle, Wash., for the Seattle-Tacoma electric line. The batteries will be placed in the power house and store up power during those hours when travel is light, and give it back when the work is heavy and at times when the engines would otherwise be overloaded.

WAR ON GERMAN PATENT OFFICE.

Chicago inventors have made protest to Germany because of alleged unfair methods of the German patent office. It is claimed that many of the most important American inventions are denied admission to patent in Germany and are thereafter appropriated by the German manufacturers.

ORIGIN OF TURKEY.

"Daddy," asked little Ephraim, "whar did de fust tukkey come from?"

"Nebber yo' mine askin' irreligious questions," said the old man; "an' we'en Pahson Thompson come fer dinner Sunday doan' yo' fink yo' hab ter ask whar dat tukkey come from, eider."

NEW GAS SIGNAL ON THE I. C.

The carbonic acid gas signal recently installed on the Illinois Central railroad promises to reduce the cost of operating

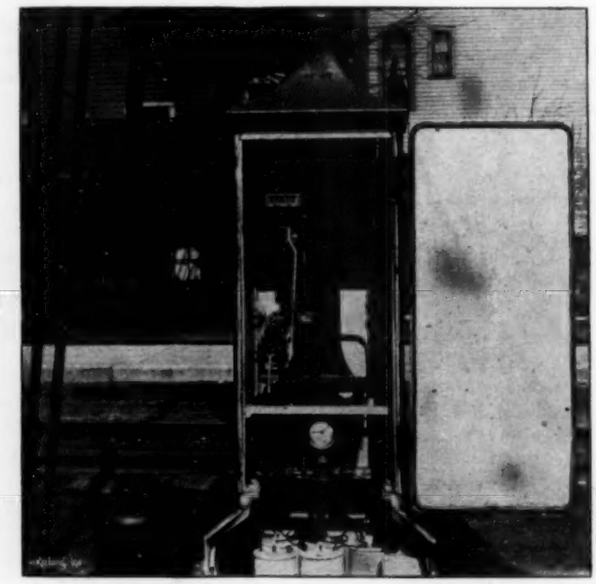
Carbonic Acid Gas Signal, Illinois Central.

semaphore arms to one-fourth of the former cost, as it is claimed that the chemicals in a single tank provide sufficient pressure to operate the arm between 13,000 and 15,000 times. In a signal at Sixty-seventh street in Chicago, 1,200 movements of the arm have been made so far with no appreciable decrease in the tank pressure. In describing the device the Railway Age says:

A tank charged with carbonic acid gas and placed at the foot of the semaphore furnishes an independent source of power for each signal. The tank is charged with a pressure of about 12,000 pounds per square inch, and is provided with reducing valves by which a working pressure of from 25 to 50 pounds is obtained for operating the arms. The device is electrically controlled, the current being supplied with a battery at the ends of the pole. The current magnetizes a solenoid which opens a valve, admitting the gas to a small cylinder, by means of which the semaphore arm is raised. When it is desired to clear the tracks, the solenoid is shunted, relieving a locking bar, opening an exhaust in the gas cylinder and allowing the arm to lower at its own weight. The gas in the cylinder further acts as a cushion for the weight of the arm and its connecting rod. Space is provided for an additional gas cylinder for the operation of another arm when necessary. The pit for the tanks is also large enough for two, so that when the pressure in one has decreased to near its point of uselessness another can be put in, its connection changed and the first removed for recharging. A gauge indicates the exact pressure of the gas tank, as well as that being used for operating the semaphore.

LYDDITE LIKE A BOOMERANG.

The extraordinary effect of lyddite has been revealed by the statement that during the recent experiments with the hulk of the old British battleship, Belle Isle, shells containing that explosive threw fragments upon the attacking vessels, 300 yards distant. Other fragments dropped close to a gunboat 2,000 yards abeam of the line of fire. The deduction drawn is that when lyddite is used there is danger for a friendly vessel at least 2,000 yards away. The Outlook compares lyddite with a boomerang and points out that to be of any service it must be dropped right on board a hostile vessel, as "if the projectile does not hit the right place it will fly back and slay the slayer."



Carbonic Acid Gas Signal, Illinois Central.

MAY REVOLUTIONIZE CEMENT INDUSTRY.

Blind Professor of Ann Arbor Devises a Furnace for Its Manufacture.

A furnace for the manufacture of Portland cement, which threatens to revolutionize the present methods, has been devised by Prof. Edward D. Campbell, the blind instructor in analytical chemistry in the university at Ann Arbor, Mich. It is alleged that at the conclusion of his tests the product will be turned out on just as scientific a basis as is steel at the present time. Prof. Campbell said:

"It is the first furnace to be built in which you can make cement under actually known conditions of time and temperature and the condition of the flame passing through it." I can hold the temperature at any point so that the furnace will not vary five degrees.

"I take a mixture of clay and marl and gradually raise the temperature and make a series of tests. Then I take a different mixture and find the influence of each individual constituent upon cement. The complications or possibilities of the different conditions of mixture, time, and temperature, makes the series long, but when I finish the work there will be some tables that ought to be of great commercial benefit to the manufacturers."

KING IS ENTITLED TO HEADS OF WHALES.

Edward VII has the right by statute to the head of every whale caught on the coasts of the British Empire. The tail is to go to Queen Alexandra, according to the British laws, so that her wardrobe may be provided with whalebone. The king is also entitled to every sturgeon brought to land in the United Kingdom; one of them, caught in the Thames, was on the table at Queen Victoria's wedding banquet. The king should receive, too, every year from divers persons, a tablecloth worth three shillings, two white doves, two white hares, a catapult, a pound of cumin seed, a horse and halter, a pair of scarlet hose, a currycomb, a pair of tongs, a crossbar, a coat of gray fur, a nightcap, a falcon, two knives, a lance worth two shillings, and a silver needle from his tailor.

lance worth two shillings, and a silver needle from his tailor.

John D. Rockefeller has given $1,000,000 to the Southern Educational movement.

FOR THE MADAM

PROFESSIONAL SHOPPERS IN LONDON

Professional shoppers are employed by large dry-groods firms in London to test the ability of shop assistants. To find out whether every customer is politely served a number of lady customers are employed to call at the various departments. They are told to give as much trouble as possible and sometimes to leave without making a purchase after looking at nearly everything in the department. In America such persons are called "spotters."

ORANGE JUICE AS A BABY FOOD.

It is not generally known that a few drops of ripe orange juice squeezed into a teaspoon is a very wholesome thing for infants a month old, says Osteopathic Health. They not only accept it greedily as a treat, but it proves a tonic for digestion and promotive of good health. A teaspoonful a day for a baby six months old is one of the best remedies for rickets.

EBONY STAIN FOR WOOD.

Cherry is the best wood for ebonizing. When well done, it is almost like ebony; the counterfeit can only be detected by an expert. Here is a good receipt for preparing the stain: 4 oz. shellac and 2 oz. borax dissolved in half gallon of water and boiled; add half oz. gylcerine and aniline black. Apply with a soft brush.

ONLY ELEVATOR GIRL IN THE WORLD.

Miss Margaret Donnelly of New York, has the unique distinction of being the only elevator girl in the world. She runs an elevator at the Margaret Fahnestock Training School for Nurses, which will soon entirely dispense with boys as elevator conductors. Miss Katie O'Connor is taking lessons from Miss Donnelly and in a short time will be given charge of an elevator herself. Miss Donnelly said:

"I have been running the elevator here for five months. At first I was timid but I soon got used to it all. Visitors here often stand in the elevator and look for the boy, and when I slam the door and pull the rope, they get pale and look half frightened out of their wits. But I would not hurt anybody for the world. It seems to come natural to me to run an elevator, and I wonder that more girls do not take it as a profession. The passengers wouldn't have so much to fear then, as women are more careful than men or boys."

The First National and the Metropolitan National banks of Chicago are to consolidate. The new institution will be Chicago's first $100,000,000 bank.

WEDDING RING AND DRESS COAT RELICS OF BARBARISM.

The wedding ring and the dress coat are relics of barbarism, according to Prof. Frederick Starr, of the University of Chicago, in an address to the "coeds." He said: "The wedding ring is a most noteworthy example of the survival of primitive customs. It was the ring by which the slave was dragged from the market after sale by her new owner. The dress coat is simply the garment worn by your ancestors when they went hunting. Because they were gentlemen they thought they had to ride in their long tailed coats, so they split the coats up the back, cut the coat away in front, added buttons at the back to hold the tails up out of the way —and there you have your dress coat. The servant wears it, not because he used to hunt and ride horseback, but simply because he had to wear out the old riding coats of his master.

TO MAKE PAPER STOCKINGS.

A Londoner has perfected a method of manufacturing paper stockings. They will be retailed at a price equal to about three cents a pair in American money. The paper is made into a sort of strong twine, which is roughened to give it a woolly look and then knitted into real stockings. The Shoe Trade Journal says:

"Cheap paper stockings would help the shoe business in some respects, and we see no reason why they should not be sold by the shoe dealers. Much of the complaints made against shoes hurting the feet is really caused by clumsy, lumpy darning."

The new parliament buildings at Berne, Switzerland, costing $1,600,000, were opened April 1 with a speech by President Zeemp and impressive ceremonies.

THE DAIRY SCHOOLS OF RUSSIA.

Phenomenal Growth of Butter Industry Results From Their Establishment.

The dairy schools of Russia have brought that country to the front as one of the foremost producers of butter, cheese and milk in the world. The industry, while not more than thirty years old there, has grown to such enormous proportions that Russia now exports more than 25,000,000 pounds of butter annually. Of this the London market alone takes 5,000,000 pounds. Most of the Russian creameries were established within the past ten or twelve years. One at Bolgoda receives 1,400,000 pounds of milk and produces 60,000 pounds of butter annually. One in Novgrod receives 4,000,000 pounds of milk and makes more than 160,000 pounds of butter. Another in Tobolsk, Siberia, uses 3,500,000 pounds of milk and produces 135,000 pounds of butter.

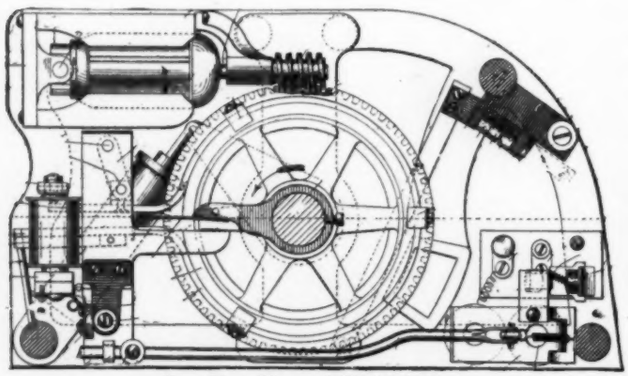
Shipping Russian Butter to London from Siberia—from Report of Henry C. Alvord, U. S. Department of Agriculture.

The first of these dairy schools which have added so much to Russia's commerce was founded by the government of Twor in 1871. Two others were established shortly afterward by the governments of Riasau and Toula. At this time melted butter only was exported from Russia, and Turkey was the only market. Now the work is supervised and assisted by the central government. Western Siberia has been the region last developed and in which progress has been most rapid. There are now in that region 334 creameries and in European Russia about 1,000.

A company has been formed for the reopening of the rich emerald mines of Somondoco, Columbia. The mines were discovered in 1537 and worked to advantage until 1792, when they were closed by order of the king of Spain.

AUTOMATIC CONTROLLER FOR STREET CARS.

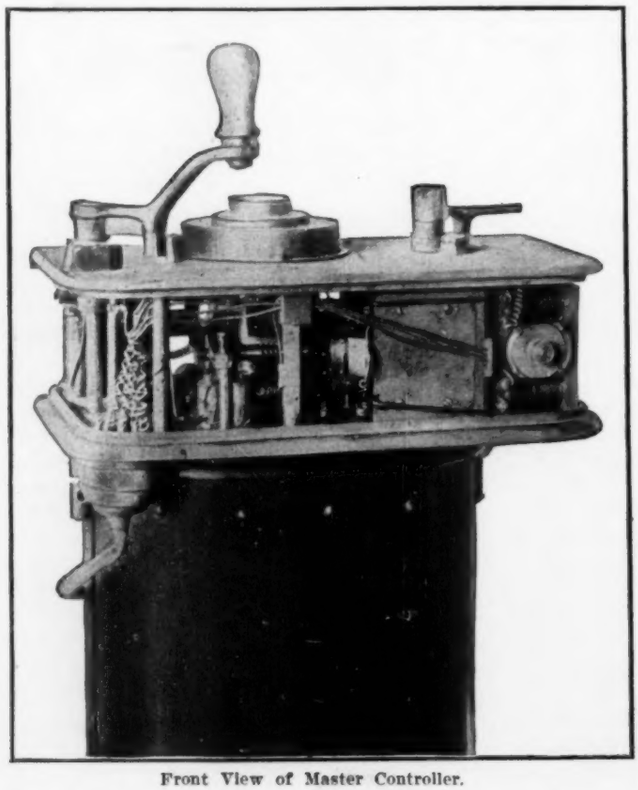
A careless motorman will turn on the full electric current in starting his car and thus use twice as much power as he should. Where several hundred motormen are doing this several hundred times a day the total amount of power wasted requires the useless burning of a great many tons of coal—and coal costs money. Besides, the strain on the motors wears them out faster than they should. Numerous attempts have been made to perfect a



Top Plan View of Mechanism.

device which would make it impossible to waste the power. Such an arrangement is already in use on two elevated roads, where cars are run in trains. We illustrate a new apparatus which it is expected will do the same on single trolley cars.

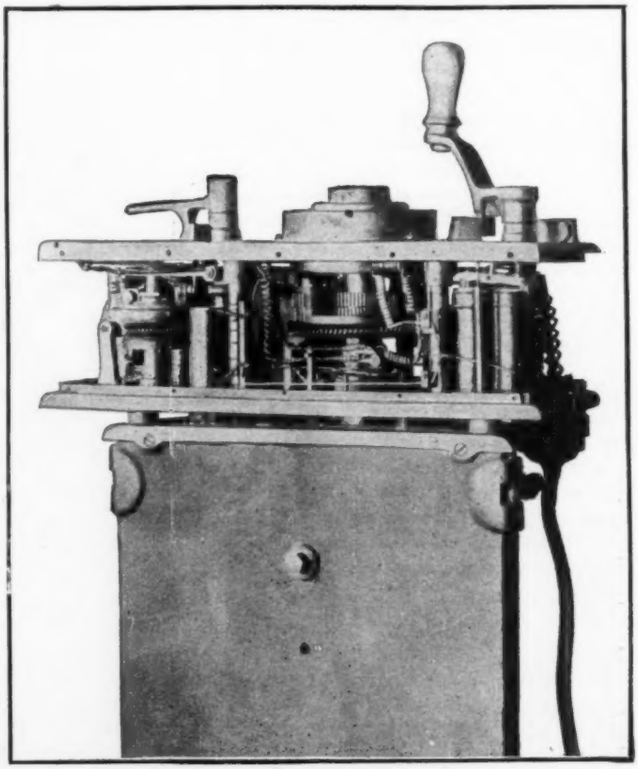
The amount of power which goes into the motors of a trolley car is governed by the machine called a controller, incased in a sheet iron box on the car platform and worked by a crank



Front View of Master Controller.

which the motorman turns. It has various "points," usually nine in number, each one representing additional power. In starting, the motorman should gradually work from the first to usually the fifth point, and when the car is under fair headway he can more quickly increase to the highest point. In moving the controller handle from point to point the mechanism in the iron case, by a combination of contact points, cuts out the resistance and the motor gets proportionately more power.

With the automatic controller illustrated herewith, the motorman has only two points or speeds, the gradual increase in flow of power being built up by the working of a miniature motor. This mechanism will only operate at a certain speed and cannot be hurried in its work. When the handle is moved to the first point the car motors work in series, which gives power without speed; at the second point the motors are worked in parallel, which gives greater speed but less starting power. With the new device should the trolley pole leave the overhead wire or current from the power house be interrupted, the controller automatically returns to the "off" position. In case anything should happen to the motorman, or he takes his hand from the



Rear View of Master Controller.

handle, the automatic controller instantly shuts off all the power and the car would come to a stop. The device may be applied to a single car or a train of cars. It is the invention of E. R. Gill, and is manufactured by the Invention Development Co. of New York.

France is first in Europe in point of fast trains, the fastest averaging 58 miles an hour. England comes second, the fastest time being 55 miles. Third is Germany with 51 miles and next Belgium with 49.

Miss Lillian Wald, of New York, is at the head of the Social Halls association which has raised $200,000 to establish model saloons to sell light wines and beer of good quality and encourage the use of temperate drinks.

A bible valued at $50,000 was purchased in Europe by J. S. Morgan, nephew of J. P. Morgan. It is the work of Italian monks, written on parchment, beautifully illuminated with its covers studded with rubies, emeralds, diamonds and sapphires.

Water power in the Philippines is said to be plentiful.

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WHEN MOTHER POURED THE TEA.

Thar's English cooks an' German cooks, an' French cooks now-a-days,
A-fixin' funny dishes in a thousand modern ways,
But jest somehow or other things don't taste the same to me,
As in the olden, golden days, when mother poured the tea.

Her snowy rolls an' steamin' toast an' waffles rich and brown,
Are far ahead o' all this trash ye git to-day in town.
An' life was sweet as honey, an' full o' joy an' glee,
In boyhood's sweetest, fleetest days, when mother poured the tea.

I see her now, the household queen, in her accustomed place,
Presidin' o'er the merry board with all a monarch's grace,
An' good old Dad an' little Nan an' Fred an' Sue and me,
Wuz feelin' prime at eatin' time, when mother poured the tea.

But mother's gone long years ago, up to a fairer clime,
An' things don't taste exactly like they did in childhood's time,
'Tain't cause I'm never hungry, I'm as chipper as can be,
But food don't taste jest like it did when mother poured the tea.

—Hilton R. Greer, in "What to Eat."

"THE GOOD OLD TIMES."

Who has not heard people talk of "the good old times?" Here are a few of the advantages our forefathers enjoyed at the beginning of the century:

There was not a public library in the United States.

Almost all the furniture was imported from England.

An old copper mine in Connecticut was used as a prison.

There was only one hat factory, and that made cocked hats.

Virginia contained a fifth of the whole population of the country.

A man who jeered at the preacher or criticized the sermon was fined.

Two stage coaches bore all the travel between New York and Boston.

A day laborer considered himself well paid with two shillings a day.

The whipping post and pillory were still standing in New York and Boston.

Trousers were fastened with pegs or laces.

The church collection was taken in a bag at the end of a pole, with a bell attached to arouse the sleepy contributors.

The Coliseum, at Chicago, where circuses and big commercial exhibitions were formerly held, is to be transformed into a mammoth indoor garden during the summer.

The battleship Illinois will represent the United States navy at King Edward's coronation.

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Attractions for Next Week.

It would amuse you to see them respond to a fire alarm in Paris. In the case of an ordinary fire, if it is nearly meal time, the firemen will sit down and eat first. If something else should turn up they may wait until the next morning and sometimes they wait for days after the alarm is turned in before going to the fire. Popular Mechanics will have an article about it next week.

You have read in this issue about a great whale that sank a ship. Such happenings are very rare in this day when ships are strong and whales are few. In the next issue we will tell about a big rise in the price of whalebone corsets because of the enormous shortage in the whale crop.

Mechanics sometimes become very extravagant when they get rich. President Schwab of the United States Steel Corporation is going to give a dinner soon at which he will have a beefsteak pudding that cost $2,500. It will be in the next issue. An Indiana man has stopped raising corn and wheat and has gone to raising quail. He will devote a 400-acre farm to the enterprise and says that quails are as easily domesticated as chickens and much more profitable. Two wild geese were killed by lightning recently while flying over in flocks. Can a bullfrog catch a bird? That is a question that is now worrying scientists. All these things and about 40 others will be told about next week in Popular Mechanics. It is a Journal having the world for its field, which tells you how to do things, and is written so you can understand it.

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